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MERCURY-ADSORBENT RETRIEVING DEVICES

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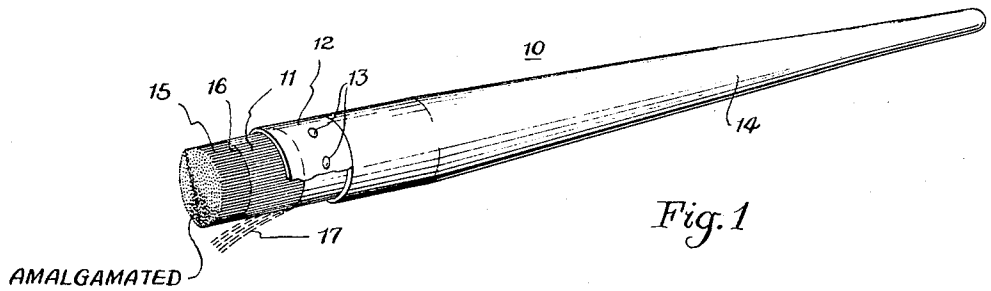



Fig. 1

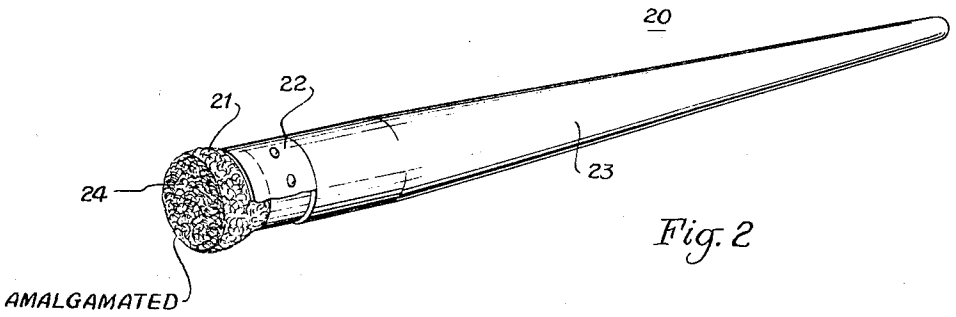



Fig. 2

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# MERCURY-ADSORBENT RETRIEVING DEVICES

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3 Claims. (Cl. 15—160)

This invention relates to mercury-adsorbent devices for retrieving spilled mercury.

Mercury has a relatively high surface tension and therefore does not "wet" ordinary materials. When spilled onto a table, floor or other surface comprised of wood, metal, plastic or the like, mercury does not soak into or form pools on the surface, but rather spatters into a large number of drops and droplets. These drops and droplets cannot be wiped up with paper, cloth, or other ordinary absorbent materials.

Heretofore, it has been common practice to sweep the mercury drops into a dustpan, or retrieve them with a syringe or other suction device. These practices are tedious and time-consuming, especially if the mercury forms a large number of droplets on an irregular surface containing crevices and the like.

Accordingly, it is an object of this invention to provide mercury-adsorbent retrieving devices which can be quickly and easily wiped over even or irregular surfaces to clean up spilled mercury droplets.

Another object of this invention is to provide mercury-adsorbent retrieving devices which adsorb and hold mercury so that it can be carried to a salvage receptacle, and which readily release the mercury when desired.

Still another object is to provide mercury-adsorbent retrieving devices which can retrieve small droplets of mercury from the crevices and holes in laboratory equipment and the like.

A further object is to provide simple, durable, re-usable, and economical mercury-adsorbent retrieving devices.

In brief, a device constructed in accordance with the principles of the present invention comprises a loose, adsorbent mass of fibers of an amalgamable metal, such as copper, brass, silver or the like. The mass of fibers is attached to a suitable handle, and the loose fibers opposite the handle are amalgamated with mercury. The amalgamated fibers break the surface tension of any mercury drops that they contact, causing the drops to be drawn onto the fibers and into the spaces between the fibers. The mercury may then be retrieved by shaking, squeezing or otherwise agitating the fibers.

The invention will be further described with reference to the appended drawing, in which:

FIG. 1 is a perspective view, broken away in part, of an exemplary brush embodiment of the present invention, and

FIG. 2 is a perspective view, broken away in part, of an exemplary metal-wool pad embodiment of the invention.

The mercury-adsorbent retrieving device illustrated in FIG. 1 comprises a brush **10** having a loose, adsorbent mass of fibers arranged as bristles **11**. The bristles **11** comprise fine, flexible wires of an amalgamable metal such as copper, brass, silver, or the like. The bristles **11** are glued, soldered, peened, or otherwise secured in a ferrule **12** that is suitably attached, as by nails **13**, to the handle **14** of the brush **10**. The ferrule **12** and handle **14** are made from durable and preferably non-amalgamable materials; for example, the handle may be wood or plastic, and the ferrule stainless steel or plastic.

To render the brush **10** mercury-adsorbent, the bristles **11** are amalgamated with mercury, preferably after being



set in the ferrule **12**. It is further preferred that only the loose end portions **15** of the bristles be amalgamated. Amalgamation is conveniently accomplised by dipping the bristles in an acid cleaning bath to the point where the bristles form a substantially compact mass, as indicated by the dashed line **16**. The acid bath, for example nitric acid, should be capable of cleaning the oxide, oil film or other foreign material from the surfaces of the bristles **11**. The bristles then are rinsed under running water, dried, and dipped into a pool of clean mercury, causing the surfaces of the bristles to alloy or amalgamate with mercury. Excess mercury held between the amalgamated bristles may be shaken out, or squeezed from the bristles with a clean cloth.

The amalgamated brush **10** is then capable of cleaning up spilled mercury. It can be used to brush or sweep drops or puddles of mercury into a container if such is convenient, or it can be used to wipe or soak up the mercury. The amalgamated bristles break the surface tension of a mercury drop upon contact, and the mercury is adsorbed onto the bristles and into the capillary spaces between the loose bristle portions **15**. A substantial volume of mercury (depending on the size of the brush **10**) can thus be picked up and carried to a remote point such as a salvage jar or other receptacle. The adsorbed mercury can be released by tapping the brush **10** against the side of the jar, by shaking the brush, or by squeezing the bristles with a clean cloth.

The brush **10** is especially advantageous when mercury is spilled on a surface having holes, grooves, corners, or other inaccessible regions. The edge of the brush often will fit into these regions; if not, a small bundle of the bristles, as indicated by the dashed lines **17**, may be bent away from the main body of bristles to provide a miniature brush that will fit into small diameter holes and the like.

The brush **10** generally will retain its mercury-adsorbent properties indefinitely. Accumulation of dirt and oil on the amalgamated bristles will diminish the ability of the bristles to break the surface tension of mercury, but such dirt and oil can be removed if necessary by repeating the acid cleaning bath and mercury treatment described above. After much use, the tips of the amalgamated bristles will be gradually dissolved by the mercury, causing the bristles to shorten. This will require a very long period of time under normal use, however.

FIG. 2 illustrates an alternative mercury-adsorbent retrieving device **20**, wherein the loose adsorbent mass of fibers comprises a metal-wool pad **21**. The metal-wool pad **21** preferably is secured in a ferrule **22** attached to a suitable handle **23**, in the manner described with respect to the brush **10** above. The metal of the metal-wool pad **21** comprises an amalgamable metal, and the loose fibers **24** of the pad opposite the handle **23** are amalgamated with mercury, using the procedure described above. The operation and characteristics of the cleaning device **20** are similar to those of the brush **10**. The device **20** is advantageous when a large area of mercury-absorbent fibers are desired for cleaning large drops and puddles of mercury.

While the invention has been described by way of specific illustrative embodiments, it is not limited to the exact details thereof. It is intended that the invention cover all modifications and changes that fall within the scope of the appended claims.

What is claimed is:

**1.** A mercury-adsorbent retrieving device comprising, a handle, a loose, adsorbent mass of fibers of an amalgamable metal, said mass being secured to said handle,

the loose portion of said fibers opposite said handle being amalgamated with mercury, whereby said fibers are capable of adsorbing spilled mercury.

2. A device as set forth in claim 1, wherein said fibers are arranged as brush bristles in said handle.

3. A device as set forth in claim 1, wherein said fibers are arranged as a metal-wool pad secured to said handle.



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